

The manufacture of catalyst-coated substrates

Abstract

The present invention relates to the field of electrochemical cells and fuel cells, and more specifically to polymer-electrolyte-membrane (PEM) fuel cells. It provides a process for the manufacture of catalyst-coated substrates for membrane fuel cells. The catalyst-coated substrates (*e.g.* catalyst-coated membranes (“CCMs”), catalyst-coated backings (“CCBs”) and catalyst-coated tapes) are manufactured in a new process comprising the coating of the substrate with a water-based catalyst ink in a compartment maintaining controlled humidity and temperature. After deposition of the ink, the substrate is subjected to a leveling process at controlled humidity and temperature conditions. Very smooth and uniform catalyst layers are obtained and the production process is improved. The catalyst-coated membranes (CCMs), catalyst-coated backings (CCBs) and catalyst-coated tapes manufactured according to this process are used in the production of three-layer and five-layer MEAs. These MEAs find use in PEMFC and DMFC stacks.